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DOI: <https://doi.org/10.1037/str0000119>

Posted at the Zurich Open Repository and Archive, University of Zurich

ZORA URL: <https://doi.org/10.5167/uzh-167681>

Journal Article

Accepted Version

Originally published at:

Lehmann, Anja I; Brauchli, Rebecca; Jenny, Gregor J; Füllemann, Désirée; Bauer, Georg F (2020). Base-line psychosocial and affective context characteristics predict outcome expectancy as a process appraisal of an organizational health intervention. *International Journal of Stress Management*, 27(1):1-11.

DOI: <https://doi.org/10.1037/str0000119>

Baseline Psychosocial and Affective Context Characteristics Predict Outcome Expectancy as
a Process Appraisal of an Organizational Health Intervention

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The data employed by this study were collected in the context of the skills-grade mix project at the University Hospital Zurich. The first author was supported by the Swiss National Science Foundation (SNSF).

The same data was used for two more studies. The study of Füllemann et al. (2016) was also mentioned in this study. The other study is: Inauen, A., Rettke, H., Fridrich, A., Sprig R., & Bauer, G. F. (2017). Erfolgskritische Faktoren der Skill-Grade-Mix-Optimierung auf der Basis von Lean Management-Prinzipien. Eine qualitative Teilstudie. [Critical factors for optimizing skill-grade-mix based on principles of Lean Management. A qualitative substudy]. *Pflege*, 30, 29-38. <https://doi.org/10.1024/1012-5302/a000511>. Furthermore, the data was used for six conference talks.

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Abstract

This study aims to examine how far group-level psychosocial and affective factors, as a relevant context, predict outcome expectancy as a process appraisal of an organizational health intervention. For this purpose, data from a university hospital ($N = 250$ representatives from 29 nursing wards) were collected. Participants took part in an intervention consisting of four-day workshops designed to improve psychosocial working conditions. Employee surveys covered baseline psychosocial (job demands and job resources) and affective aspects (valence, positive and negative activation) as context variables. At the end of the workshops, participants evaluated the intervention process with the outcome expectancy scale. Applying a multilevel approach, the results indicate that both baseline psychosocial characteristics (job resources, in particular managerial support) and baseline affective factors (valence) as relevant context characteristics are related to the appraisal of the intervention process (outcome expectancy). The post hoc mediation analysis further shows that the affective context (valence) mediates the relation between job resources (managerial support) and outcome expectancy. There was no relation between job demands and outcome expectancy as well as between negative activation and outcome expectancy. This study shows that already healthy contexts with good psychosocial working conditions and well-being relate to a beneficial intervention process. Specifically, this study highlights the essential role of affects that influence process appraisals. These affects are, in turn, influenced by the psychosocial context.

Keywords: context, process, organizational health intervention, workplace affects, psychosocial working conditions

Organizational-level health interventions (OHIs) appear to be highly promising in enhancing employee health in the workplace because they are considered to tackle the sources of problems in changing how the work is designed, organized, and managed. However, in these kinds of interventions, the mechanisms leading to change are still unclear (Biron, 2012; Nielsen & Randall, 2013). Empirical research shows that inconsistent effects are a rule rather than an exception. In some cases, OHIs lead to an improvement of health and well-being whereas in other cases they do not demonstrate any effect at all. One main reason for these inconsistent effects is that OHIs dovetail with the complexity of social systems that are difficult to control. Hence, some subsystems may be supportive whereas others may be constrictive for change (Semmer, 2006). Thus, to face this complexity, and to understand the mechanisms of change, an exploration is needed regarding the influence of contextual factors on the intervention process instead of evaluating intervention-outcome-relations only (Biron, 2012; Fridrich, Jenny, & Bauer, 2015; Nielsen & Abildgaard, 2013; Nielsen & Randall, 2013).

The realist evaluation approach (Pawson, 2013) offers a way forward for OHI research (Nielsen & Miraglia, 2017). According to the realist evaluation, it is crucial to investigate the mechanisms of an intervention in order to address the complex questions when, why, and under which circumstances an intervention works. Therefore, context-mechanisms-outcome (CMO) configurations are applied. This means that context is considered as a predictor for the intervention process and not solely as a confounder that should be controlled. Within OHI research, researchers developed frameworks that follow the logic of realist evaluation and highlight the influence of contextual factors on process mechanisms in OHIs (e.g., Fridrich et al., 2015; Nielsen & Abildgaard, 2013; Nielsen & Randall, 2013). Thus, this approach leads to hypotheses on the linkages between context and the intervention process that can be empirically tested (e.g., von Thiele Schwarz, Nielsen, Stenfors-Hayes, & Hasson, 2017).

Context can be understood as the underlying frame of an intervention that provides constraints or opportunities for the process of change (Fridrich et al., 2015; Ipsen, Gish, & Poulsen, 2015; Nielsen & Randall, 2013; Randall, 2013). For empirical research, however, it appears to be challenging to capture the whole complexity of context that includes different sub-aspects and illustrates its wide-ranging and multifaceted characteristic (see Fridrich et al., 2015 for an overview). Hence, as a guiding conceptual framework, this study refers on the notion that suggests that *healthy contexts* (e.g., good psychosocial working conditions and well-being) are initially needed to generate beneficial outcomes (Nielsen & Randall, 2013; Randall, 2013). The issue for OHIs is however that employees working in these healthy contexts may not necessarily and primarily need an intervention. Although some scholars (e.g. Nielsen & Randall, 2013; Randall, 2013) acknowledged the benefits of healthy contexts for the intervention process, there is a lack of research that has empirically tested whether the desired *outcomes* (e.g. psychosocial health and well-being) of an OHI *predict* the intervention's effects. That may be due to the general lack of research on the mechanisms of change. Johns (2006) also noted that it is not the case that context is not studied, but its "influence is often unrecognized or underappreciated" (p. 389).

Therefore, this study addresses the question whether context characteristics predict process factors of an OHI by *inverting* common outcomes into a "baseline intervention context" (Randall, Cox, & Griffiths, 2007, p. 1197) for the change process. Specifically, the study aims to examine in how far baseline psychosocial and affective factors as relevant context predict the process appraisal of OHIs.

Psychosocial and Affective Context as Predictors for Process Appraisals

Psychosocial context. Psychosocial working conditions are regarded to be relevant context characteristics because they refer to the so-called *discrete context*. In contrast to the *omnibus context*, discrete context characteristics influence behavior and the intervention process directly. Furthermore, they are considered to be rather changeable than omnibus

context characteristics (Fridrich et al., 2015). There are three components of the discrete context: task, social, and physical (Johns, 2006). Referring to these components, psychosocial working conditions are to be assigned to the (1) task-related context because it includes work-specific components (e.g., autonomy or resources) that affects organizational behavior and also (2) to the social-related context because it includes interpersonal relations at the workplace.

A prominent framework capturing psychosocial working conditions is the job demands-resources (JD-R) model (Bakker & Demerouti, 2007; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). One core assumption of this model, or theory (Bakker & Demerouti, 2013), is that all working environments or job characteristics can be modeled using two different categories, namely job demands and job resources. Job resources such as social support, autonomy, or control are those work characteristics that are considered to have a positive association on outcomes like well-being, job performance, and commitment. Likewise, job demands are those job characteristics that require physical and mental efforts and are, therefore, linked to reduced health or exhaustion (Demerouti et al., 2001). The JD-R model is widely used in research and has been empirically supported in many studies (e.g., Bakker, Demerouti, Taris, Schaufeli, & Schreurs, 2003; Bakker, Demerouti, & Verbeke, 2004; Hakanen, Bakker, & Schaufeli, 2006).

Regarding OHIs, it can be expected that contexts with low demands and high resources contribute to more capacities and capabilities for change (Nielsen & Randall, 2013). Accordingly, it is to assume that employees working in those contexts are rather ready for change and will have positive attitudes with regard to the intervention. On the individual level, there is empirical evidence supporting this assumption. For instance, Hakanen, Perhoniemi, and Toppinen-Tanner (2008) showed that job resources lead to positive gain spirals at work and will thereby promote higher work-unit innovativeness over time. Furthermore, there is empirical evidence showing that job resources (support from supervisor,

job control, and opportunities for professional development) are positively related to organizational change evaluations. On the other side, there is a negative relation between job demands and organizational change evaluations (Hetty van Emmerik, Bakker, & Euwema, 2009).

Affective context. Besides psychosocial work characteristics, this study seeks to highlight the role of affective states as context characteristics. The consideration of affects as a generic term of emotions, mood, and feelings (Russell & Carroll, 1999) is due to their ubiquitous role for change processes. According to the transactional model of stress (Lazarus & Folkman, 1984; Lazarus, 1995), the appraisal of both the environment and emotions play a critical role in the experience of stress in general or work stress in particular. Because stress is a prominent hindrance towards change (Nielsen & Randall, 2013; Vakola & Nikolaou, 2005), the differentiation of psychosocial (as an environmental-related component) and affective characteristics (as a person-related component) contributes to a integrative conceptualization of the discrete context of an intervention.

There is already a substantial amount of research that has discussed affective reactions resulting from change processes. For instance, studies show that change projects are often associated with fears, negative emotions, uncertainty, and resistance among employees (Bovey & Hede, 2001a, 2001b; Kiefer, 2005; Lines, 2005). However, emotions are not only a result of any given event but also “drivers of attitudes towards change” due to their motivational potential (Lines, 2005, p. 16). Thus, it is to assume that positive affects are associated with an optimistic anticipation regarding to a forthcoming outcome, whereas people in negative affective states may rather internalize defensive attitudes (Seo, Barrett, & Bartunek, 2004). Research supports the assumption regarding the influence of affects on the change processes. For instance, Biron and Karanika-Murray (2014) argued that positive emotions are transmitted between people working together and will result in an emotional contagion as a mechanism of change. A further association is derived by the interrelatedness

of positive affect and efficacy-beliefs (Salanova, Llorens, & Schaufeli, 2010). Therefore, referring to social cognitive theory (Bandura, 1986, 2004) it is to anticipate that these interrelations trigger higher outcome expectancies concerning the intervention (see the next section on the role of outcome expectancy). Likewise, research shows that negative emotions lead to an avoidance of the organizations' goals expressed by a growing mistrust and turnover-intention (Kiefer, 2005).

Outcome Expectancy as a Process Appraisal

The intervention process is considered to forecast how the intervention will work and whether it will lead to the desired effects (Biron & Karanika-Murray, 2014; Randall, 2013). It may be conceptualized as “individual, collective or management perceptions and actions in implementing any intervention and their influence on the overall result of the intervention” (Nytrø, Saksvik, Mikkelsen, Bohle, & Quinlan, 2000, p. 214) and has been considered as an appropriate way to better understand the effectiveness of an intervention (Randall et al., 2007; Semmer, 2006). Process appraisals might be examined at different intervention stages, for instance during or directly after the intervention (e.g., after the workshop sessions) or solely refer on specific parts or elements of the intervention.

Recently, Fridrich, Jenny, & Bauer (2016) favored outcome expectancy as a suitable process appraisal for OHIs. The authors indicated outcome expectancy as a core element for change because this construct is key to different behavioral change theories (e.g., Ajzen, 1991; Bandura, 2004; Lazarus & Folkman, 1984; Prochaska & Velicer, 1997; Schwarzer, 2008). In all these theories, outcome expectancy is considered an important predictor to explain behavioral change. It can be described as the “anticipation of a positive or negative experience resulting from a given event or behavior” (Fridrich et al., 2016, p. 5). Empirical evidence supports the importance of outcome expectancy for predicting intervention outcomes for different kinds of OHIs. For instance, Füllemann, Fridrich, et al. (2016) aggregated outcome expectancy on the team level and illustrated in a multilevel analysis the

association between outcome expectancy and learner work processes. Furthermore, Fridrich et al. (2016) showed that individual and organizational outcome expectancies of a stress management intervention predict the perceived impact of the intervention.

The Current Study

This study aimed to examine in how far baseline psychosocial and affective factors as relevant context predict the process appraisal of organizational health interventions.

Initially, we conceptualized context as aggregated individual-level variables. Context might be regarded as a collective perception on the group level because there are connections between this construct and other constructs like organizational *climate* or *culture* (Fridrich et al., 2015) that are conceptualized as shared perceptions of the work environment (Denison, 1996; James & James, 1989; Schneider, Ehrhart, & Macey, 2013). There is also research that explicitly considered work characteristics on the group level as collective perceptions of context characteristics (Campion, Medsker, & Higgs, 1993; Füllemann, Brauchli, Jenny, & Bauer, 2016). Also considering the affective context, there has been growing empirical evidence that emotions widen across individuals to a group level phenomenon of shared emotions. Employees who share common structural conditions might also experience common emotions at work (Barsade & Gibson, 2007; Bartel & Saavedra, 2000; George, 1990).

Furthermore, based on the mentioned considerations, we will examine the relations between context and process appraisals applying a multilevel-methods approach:

Hypothesis 1: There is a relation between the psychosocial context and the intervention process appraisal. We expect a positive relation between job resources and outcome expectancy (hypothesis 1a) and a negative relation between job demands and outcome expectancy (hypothesis 1b).

Hypothesis 2: There is a relation between the affective context and the intervention process appraisal. We expect a positive relation between positive affects and outcome

expectancy (hypothesis 2a) and a negative relation between negative affects and outcome expectancy (hypothesis 2b).

Method

Procedure and Sample

Data from $N = 250$ workshop participants nested in 29 nursing wards of a university hospital in Switzerland were collected. An online-questionnaire gathered context variables a few weeks before the start of the workshops. In total, four workshops days have been implemented in all nursing wards. On the fourth workshop day, process appraisals were collected via a paper-pencil questionnaire immediately after the workshop because employees already had an overview on the contents of the intervention and its related activities. The study participants generated an anonymous identification code in order to match the online survey with the paper-pencil questionnaire.

The workshop participants were representatives of their nursing wards, including their supervisors, and had to transmit the results generated in the workshops to the remaining employees of their respective ward. The participants were chosen by the internal project managers and the heads of the departments who made sure that different occupational levels (e.g., trainees and experts) were represented. The sample corresponded to 17% of all employees in the involved wards. The median number of workshop participants was $N = 8$ (range: 4–22) per ward. The mean age of the workshop participants was 36 ($SD = 12$), and 16.4% were male and 83.6% were female.

The Intervention

The considered intervention was a lean healthcare intervention with an explicit focus on the improvement of psychosocial working conditions and health. The idea of lean originates from the car industry and is nowadays often applied in the hospital setting (Dahlgaard, Pettersen, & Dahlgaard-Park, 2011). A common understanding of lean includes approaches to increase efficiency and reduce “waste” (Shah & Ward, 2007). This contains the

application of techniques and tools in order to create a culture of continuous improvement (Womack & Jones, 2003). In the hospital setting, this covers the removal of unnecessary processes or procedures like the recoding of patient details several times or reducing waiting hours for staff and patients.

Because there is criticism on general lean interventions that draws attention on an increase of demands through rationalization, it is recommended to design those interventions as an OHI that explicitly include contents that focus psychosocial working conditions and health (Hasle, Bojesen, Langaas Jensen, & Bramming, 2012). Therefore, the intervention of this study includes approaches of lean management as well as an explicit integration of contents that covers the improvement of psychosocial working conditions and employee health.

An essential element of the intervention was a four-day workshop held in every nursing ward in a standardized way. In general, the workshops were based on a participatory problem-solving approach. That means that employees themselves developed action plans for their respective ward to be implemented. The superior goal was to identify the best *skill and grade mix* of the employees in applying lean principles such as mapping the value stream, identifying value, and creating flow (Womack & Jones, 1996). Furthermore, the workshops contained the analysis of psychosocial factors at work.

The internal project manager of the hospital implemented the workshops in every ward. The workshops took place at the internal training center of the hospital within a period of four to six weeks. Besides that, there were also side visits for practicing so-called *gembas* (the real place) that aim to identify inefficiencies in work processes (e.g., the analysis of needless working routes and waste). Each workshop day comprised specific standardized topics and tasks as well as the definition of the fields of action and the formulation of concrete action plans (see Table 1).

-- Insert Table 1 about here --

Measures

Psychosocial context. Job demands and resources were assessed with subscales from the *HSE Management Standards Indicator Tool* (Cousins et al., 2004). For job resources, we used the subscales control (e.g., “I can decide when to take a break”), managerial support (e.g., “I can rely on my line manager to help me out with a work problem”), peer support (e.g., “My colleagues are willing to listen to my work-related problems”), and role clarity (e.g., “I am clear about the goals and objectives for my department”). One subscale covered job demands, which measures the level workload or pace of work (e.g., “I have to work very intensively”). All subscales were measured with a 5-point scale (*never to always or strongly agree to strongly disagree*). Concerning job resources, the estimated values for internal consistency reliability were $\alpha = .90$ for managerial support (five items), $\alpha = .75$ for control (six items), $\alpha = .71$ for role clarity (five items) and $\alpha = .77$ for peer support (four items). For the total scale of job resources Cronbach’s alpha was $\alpha = .86$. Likewise, for job demands, the estimated value for internal consistency reliability was $\alpha = .87$ (eight items).

Affective context. The employees’ affective states were measured using the PANAVA-scale (Schallberger, 2005). *PA* refers to positive activation, *NA* to negative activation, and *VA* to valence (satisfaction and happiness) at work. The PANAVA is based on the circumplex model of affect (Russell, 1980; Watson, Clark, & Tellegen, 1988) and represents a German version in relation to the workplace. This questionnaire consists of 10 opposite adjective pairs measuring three scales: four items on positive activation (energetic/drowsy, asleep/active, sluggish/enthusiastic, and excited/dull), four items on negative activation (distressed/at rest, placid/angry, calm/nervous, fearful/relaxed), and two items on valence (satisfaction/dissatisfaction, happiness/unhappiness). Participants indicated on a 7-point continuum how they felt at work during the past weeks. In the current study, the estimated values for internal consistency were $\alpha = .71$ for positive activation, $\alpha = .82$ for negative activation, and $\alpha = .86$ for valence. Although the relationships between VA to PA

and NA are inconsistent and unclear, we assigned VA due to its positivity to PA (Williams, Suls, Alliger, Learner, & Wan, 1991; see also Schallberger, 2005). Thus, VA and PA correspond to positive affective states ($\alpha = .87$) of the total scale and NA corresponds to negative affective states.

Intervention process. The process appraisal was assessed with the *outcome expectancy* scale (Fridrich et al., 2016). Three items captured expectations whether the workshops will lead to improvement in working conditions, within the team, and in the lean work processes. A sample item is as follows: “Do you think the workshop will have a positive effect on your work?” The scale was rated on a 7-point scale (1 = *no, not at all*, 7 = *yes, very much*). In the present study, the estimated internal consistency reliability was $\alpha = .82$.

Data Analysis

To assure the appropriateness of aggregating the individual-level data to the group level, the mean $r_{WG(J)}$, $ICC(1)$ and $ICC(2)$ were calculated. The mean $r_{WG(J)}$ is an index to assess within-team agreement for each group separately (James, Demaree, & Wolf, 1993). A mean $r_{WG(J)}$ greater than .70 is considered as an adequate level of agreement (James et al., 1993). The second procedures, the ICC s, estimate whether membership in the same group is associated with more similar answers. The $ICC(1)$ can be defined as the proportion of the total variance explained by group membership. The values are usually interpreted as a measure of effect size meaning that a value of .01 might be viewed as a small, a value of .10 as a medium, and a value of .25 as a large effect (LeBreton & Senter, 2008). Furthermore, the $ICC(2)$ assesses an estimate for the reliability of the group means. Values greater than .70 are generally used to justify aggregation (Bliese, 2000). However, some researcher argue not to expect large differences among groups who belong to the same organization. They conclude that the F -ratio needs to be at least greater than 1.00 even when the values of the ICC s are not statistically significant (George, 1990; Neal & Griffin, 2006). Others (e.g., Liao & Chaung,

2007) also argue that low $ICC(2)$ values should not prevent aggregation if this is justified by theory and acceptable values of the $r_{WG(J)}$.

To test hypotheses 1 and 2, we employed a multilevel analyses with psychosocial and affective context as level-2 predictors and outcome expectancy as the dependent variable. The level-2 predictors were centered around the grand mean. Within multilevel analysis, we compared several models starting with the null model that includes only the intercept. In the subsequent steps, context predictor variables were included consequently. The improvement of the model can be compared by using the Akaike information criterion (AIC) on a smaller-is-better-basis.

Results

Aggregation Analysis

For all context variables, we calculated the values of $ICC(1)$, $ICC(2)$, and the mean $r_{WG(J)}$ values (see Table 2). The mean $r_{WG(J)}$ values were in acceptable ranges (.67–.97). The $ICC(1)$ values were between .03 and .19 and the $ICC(2)$ ranged from .12 to .51. Some $ICC(1)$ -values were not statistically significant (resources [total], role clarity, and positive activation) and most $ICC(2)$ values were moderate or low.

Although there were some weak values, we concluded that there is sufficient justification for aggregation because of our theoretical considerations and the acceptable values of the mean $r_{WG(J)}$. This conclusion is also supported by the considerations of other scholars who argue that low $ICC(2)$ values should not prevent aggregation if this is justified by theory and acceptable levels of $r_{WG(J)}$ (e.g., Liao & Chaung, 2007) or that the F -ratios of the $ICC(1)$ should be at least greater than 1.00 (e.g., George, 1990; Neal & Griffin, 2006).

-- Insert Table 2 about here --

Intercorrelations

The means, standard deviations and correlations of independent variables at level 2 are reported in Table 3.

-- Insert Table 3 about here --

Multilevel Analysis

Table 4 illustrates the results of the multilevel analyses. The null model indicates that the average level of outcome expectancy varies significantly across nursing wards, justifying further investigation of contextual effects. The intraclass correlation coefficient more specifically indicates that 21% of the variation in outcome expectancy is attributable to the nursing context.

To test the linkage between the psychosocial context and outcome expectancy we entered job resources (total) and job demands into model 1. The results showed a significant positive association between job resources (total) and outcome expectancy ($B = 0.76$, $SE = 0.35$, $p = .020$, one-tailed), but no significant association between job demands and outcome expectancy ($B = -0.04$, $SE = 0.23$, $p = .429$, one-tailed). In order to explore the relative importance of the job resources variables, we entered the subscales of job resources into model 2. The results indicated that managerial support was the only significant and thus most important predictor for outcome expectancy ($B = 0.36$, $SE = 0.18$, $p = .030$, one-tailed). When comparing model 1 with model 2, model 1 showed the better model fit (model 1: $AIC = 408.18$, model 2: $AIC = 412.72$). Thus, it is to conclude that hypothesis 1a was supported due to the significant association between the job resources (total) scale and outcome expectancy, but hypothesis 1b received no support.

To test the linkage between the affective context and outcome expectancy, we entered positive affect (total) and negative activation into model 3. In this model, there was no significant predictor of the affective context variables (positive affect [total]: $B = 0.15$, $SE = 0.21$, $p = .241$, one-tailed; negative activation: $B = -0.18$, $SE = 0.17$, $p = .162$, one-tailed). However, when we considered the subscales of positive affect (valence and positive activation) in the model (model 4), there was a significant association between valence and outcome expectancy ($B = 0.50$, $SE = 0.21$, $p = .014$, one-tailed). The model fit of model 4

($AIC = 406.24$) is also better than the model fit of model 3 ($AIC = 408.59$). Thus, hypothesis 2a received partially support for the sub-scale valence and hypothesis 2b was not supported.

-- Insert Table 4 about here --

Post Hoc Analyses

In order to explore the relative importance of the psychosocial and affective context predictors, we entered all subscales into one model (model 5). In this model, no predictor was significant anymore. Because of possible power issues referring to the amount of level 2 predictors in this model, we then entered only the significant predictors of the previous models into model 6 (job resources [total] and valence as predictors) and model 7 (managerial support and valence as predictors), respectively. In these models, job resources (in particular managerial support) were not significantly associated with outcome expectancy anymore. The only significant predictor was valence.

Compared to all models, model 7 has the best model fit ($AIC = 403.93$). Thus, we considered model 7 as the final model. This model explains 64.7% of variance at level 2 compared to the null model. The total explained variance in model 7 is 11%.

In model 7, managerial support was not significantly related to outcome expectancy that indicates a mediation between managerial support and outcome expectancy via valence (Baron & Kenny, 1986). This mediation was confirmed by the Monte Carlo method (Selig & Preacher, 2008) on a 95 % CI [.01; .43]. The relationships of model 7 are shown in Figure 1.

-- Insert Figure 1 about here --

Discussion

The main intention of this study was to investigate the linkages between contextual factors and process appraisals of an organizational health intervention. Specifically, this study tested whether healthy contexts (e.g., good psychosocial working conditions and health) influence a beneficial intervention process. In doing so, we first operationalized context factors on the group level as shared and collective perceptions. The results of the aggregation

analyses supported the theoretical considerations in showing that individual-level variables of the psychosocial work characteristics (psychosocial context) and the affective states (affective context) may be aggregated on the group level.

Second, we conducted multilevel analyses on the influence of context on process factors. The results illustrated that it is worth it to differentiate context into a psychosocial and affective component; both factors are associated with the intervention process. Thus, good baseline working conditions and well-being support beneficial outcomes that confirms the assumption that healthy contexts are initially needed to generate a beneficial intervention process (Nielsen & Randall, 2013; Randall, 2013).

However, our results illustrated a differentiated view of the psychosocial and affective variables as context predictors. Regarding the psychosocial context our results highlighted the role of job resources, specifically managerial support (Hypothesis 1a). On the other side, our results did not support Hypothesis 1b, and we did not find any significant association between job demands and the appraisal of the intervention process. It is therefore to conclude that job resources are crucial for the intervention process irrespective of demanding circumstances exist.

The JD-R model (Bakker & Demerouti, 2007; Demerouti et al., 2001) offers explanations for these effects as job resources and job demands refer to different underlying psychological mechanisms. Job demands refer to a health impairment process in which employees need to mobilize efforts and compensatory strategies leading to exhaustion and to health problems. Job resources, in contrast, can buffer the impact of job demands and are also important in their own right. This means that job resources are key for motivational energy as they foster employee engagement. Several studies stress the importance of job resources. For instance, studies showed that job resources have the potential to buffer the negative effects of demanding working conditions (Bakker, Demerouti, & Euwema, 2005; Bakker, Hakanen, Demerouti, & Xanthopoulou, 2007) and are a source of motivation and extra-role behavior

(Bakker et al., 2004). In particular, the important role of managerial support that is associated with various work-related and well-being outcomes in different occupational fields was highlighted in several studies (e.g., Bratt, Broome, Kelber, & Lostocco, 2000; Jones-Johnson & Johnson, 1992; Repetti, 1987). Hence, job resources play a key role for a productive and healthy working environment that stimulates employee motivation, especially considering the circumstances of the intervention that includes additional workloads and efforts of the employees (Tvedt, Saksvik, & Nytrø, 2009).

On the other side, the assumption that job demands might play a minor role might also be an artifact due to a possible curvilinear relation between demands and outcome expectancy, meaning that a low level as well as a high level of job demands are a hindrance of a successful change process. A low level of job demands might reflect a context where people do not see an urge for change. On the contrary, when the job demands are too high, people just do not have the ability or capacity to engage in a change process.

Furthermore, for the affective context, we only found significant effects for valence but not for positive or negative activation. Thus, our results partially support hypothesis 2a, but not hypothesis 2b. The important impact of valence compared to the other affective states can be interpreted with reference to the circumplex model of affect (Russell, 1980; Watson et al., 1988). This model suggests that affective experiences are a result of two independent systems, namely activation (or arousal) and valence. While valence denotes feelings that are experienced as positive or negative in a hedonic meaning (happiness or satisfaction), positive or negative activation refers to a state of intensity and readiness to act. Given our findings that valence is the only significant affective predictor, we conclude that it is not a matter of arousal but rather a matter of general well-being and pleasantness that influences outcome expectancy. Furthermore, the non-significant result for negative affective states with outcome expectancy might be interpreted as a less relevant role of an avoidance system for the appraisal of the intervention process. Whereas positive affects rather refer to a rewarding

system, negative affects become apparent when the aim is to prevent punishment or aversion (Schallberger, 2005). For the intervention context, this means that defensive affects are not the driving forces or hindrances for the intervention appraisal. Instead, positive affects at work appear to be crucial in promoting efficacy beliefs (Salanova et al., 2010).

The results of the post hoc mediation analysis showed that context has not only a direct association to process but is also related in itself. Thus, although the results illustrated that affects have a direct relation to the intervention process, they do not stand on their own: Psychosocial working conditions, specifically job resources like managerial support, influence these affective states. In other words, the psychosocial context influences the process of the intervention indirectly through the promotion of the affective context.

The relation between work characteristics and emotions is in line with several theories. According to affective events theory (Weiss & Cropanzano, 1996), work characteristics trigger some events at work more likely, and thereby influence affects and moods of the people at work. Furthermore, broaden-and-build theory (Fredrickson, 2001) and conservation of resources (COR) theory (Hobfoll, 2001) claim that there are interrelations between emotions and resources. The broaden-and-build theory suggests that positive emotional states enable personal resources through broadening *thought-action repertoires* (e.g., the discovery of novel and creative actions, ideas and social bonds). These resources promote even more positive emotions that result in an *upward-spiral* between resources and positive emotions (Fredrickson, 2001). Consequently, it can be anticipated that the interrelation between positive emotions and resources leads to an upward-spiral, and thereby has a positive influence on the intervention process.

Also, COR theory states that there are gain and loss spirals. Gain spirals occur because resources promote even more resources. This accumulation of resources leads to desirable psychological states, like to an enhancement of well-being. Likewise, a lack of resources result to further losses and thus to a reduction of well-being (Hobfoll, 2001). Furthermore,

COR-theory highlights the socially scripted component of appraisals that occur within social groups. Therefore, it is to conclude that specific social groups (in our case specific nursing wards) may rather be able to initiate a desired intervention process because they have enough resources to do so.

Taken together, this study contributes to OHI research in illustrating the importance of considering the influence of contextual conditions on process appraisals. This is in line with the realist evaluation approach (Pawson, 2013) and with several frameworks for intervention evaluation that highlight the importance to explore context and process instead of evaluating intervention outcome-relations only (e.g., Fridrich, et al., 2015; Nielsen & Abildgaard, 2013; Nielsen & Randall, 2013). It is to note that these frameworks illustrate a general big picture on these context-process relations. At the same time, individual studies are unable to cover the whole complexity of these change mechanisms that makes a focused view on specific variables necessary (Nielsen & Abildgaard, 2013). This study illustrated the benefits of such a focused view because it enables the consideration and integration of theoretical perspectives with regard to these variables and the associated empirical findings. This, in turn, contributes to a deeper understanding of psychological processes within specific context-process linkages.

Limitations and Future Research

The key strength of this study is the multilevel examination between context and process in using two different time points. However, there are still some methodological and conceptual limitations to be recognized and considered for future studies. One limitation is the relatively small sample size resulting from aggregating individual-level data leading to power issues potentially contributing to type II errors. Thus, in the post-hoc analysis, we only entered variables into one model that were found to significantly influence outcome expectancy. On the other hand, finding relationships in a small sample illustrate large effect sizes (Cohen, 1992). Thus, our significant findings showed associations between context and

process that are particularly relevant. Nevertheless, we do not deny that there might be relationships between the other variables but were not significant due to power issues. Therefore, future studies should consider a larger level-2 sample size to increase statistical power.

Another potential limitation refers to the specificity of the setting in which the intervention took place. The perceptions of employees working in nursing wards of a university hospital in Switzerland might differ from other employees working in other professions, cultures, and countries. Generalizability is a concern within OHI research as organizations differ in terms of context, structure, and procedures (Nielsen, Randall, Holten, & González, 2010). It is however to note that intervention research within the hospital setting is of particular interest (Montgomery, Doulougeri, Georganta, & Panagopoulou, 2013). In our specific case, this study was conducted within a university hospital that included a broad range of nursing wards working within different medical fields. Thus, diversity within the organization is represented that relativizes this limitation. Furthermore, according to the realist evaluation approach (Pawson, 2013), it is important to investigate context and process mechanisms to understand the inner (psychosocial) dynamics of change. Although interventions work differently within different settings, realist evaluators argue that a deeper understanding of what works, for whom, and under which condition is transferable from one setting to another (Goodridge, Westhorp, Rotter, Dobson, & Bath, 2015; Nielsen & Miraglia, 2017). Regarding this, we also discussed theories that express a generalized understanding of phenomena and support our results and conclusions. Nonetheless, it is still desirable that these results are replicated within different occupational fields and settings.

Our results confirm that interventions initially created to improve working conditions and health may only lead to the desired effects in those groups with *a priori* healthy working conditions. Thus, future studies should address the issue in how to deal with working groups with poor contextual conditions. The focus on these working groups is critical because it can

be assumed that the impact of a resources lost (a lower level of resources lead to a resource lost and to a reduced well-being) is generally higher than the impact of a resource gain (a high level of resources lead to more resources and to a higher well-being) (Hobfoll, 2001).

Moreover, this study did not investigate the linkages between outcome expectancy and any intervention outcome variables as this has already been done in a previous paper building on the same intervention study and related data (Füllemann, Fridrich, et al., 2016). However, in the future, more replicated research on these linkages is needed.

Additionally, although existing research has highlighted the predictive power of outcome expectancy as a process variable, it would be desirable to a) assess other process variables on b) additional time points. We decided to assess process perceptions directly after the workshop sessions because at this time point employees have gained a general impression on the contents of the intervention and its related activities. At a later stage, the intervention might follow different directions because, within a participatory intervention, employees themselves are the ones with ownership on the intervention's activities. This means that employees themselves choose which kind of *sub*-intervention should be implemented in which way. From a researcher's perspective, this implies difficulties in the detection of important mechanisms that lead to change (Nielsen, Fredslund, Christensen, & Albertsen, 2006). Future studies should take this issue into account in order to develop a more comprehensive picture of the development of process perceptions over time.

It is also to note that we only examined context and process appraisals of those employees who participated as workshop participants. As not every employee took part in these workshops, selection processes are possible. This means that the workshop participants might experience their own sub-context and -process that possibly differ to the remaining employees. Hence, we can only draw conclusions regarding the groups of workshop participants. Future studies should therefore focus on the transition processes between workshop participants as change agents and the remaining employees as change recipients.

Considering the affective context, it should be recognized that intense positive emotions may not necessarily be beneficial because they can lead to naïve risk taking and low decision quality (Mittal & Ross, 1998; Yuen & Lee, 2003). To avoid positivity biases, there is a claim for a so-called *realistic optimism* in “searching for positive experiences while acknowledging what we do not know and accepting what we cannot know” (Schneider, 2001, p. 235). Future research should examine ways to assure positive attitudes without supporting damaging illusory beliefs.

Conclusions

This research shows that it is worth examining context and process of an OHI. In particular, the results highlight the important role of affects as drivers for change processes. On the other hand, those affects are a reflection of the psychosocial working environment in which employees are surrounded. Thus, this study illustrates the relation of psychosocial working conditions and affective states, which, in turn, have an impact on the intervention process.

Furthermore, this study provides indications that an OHI might also contribute to separation-effects within an organization. Teams working within good contextual conditions might successfully implement an intervention whereas those teams working within poor contextual conditions rather might experience a failing intervention process. Hence, further sub-group analyses appear to be promising to understand the employees' needs working within their group-specific context. Furthermore, it is needed to develop and apply measures reaching groups working within poor contextual conditions.

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Table 1

Topics and contents of the four-day skills-grades-mix workshops implemented in nursing wards

Topics	Contents
Day 1: Laying the foundations: Analysis of current value stream	Gemba: Analysing current value stream, process steps and covered distance, and identifying general waste. Analysing interactions between employees, defining fields of action and formulating concrete action plans to be implemented
Day 2: Concreting the target process	Presenting and discussing employee survey results on psychosocial working conditions, team climate, employee well-being and work life balance. Defining fields of action. Formulating concrete action plans to be implemented. Introducing the hospital's overall lean strategy: lean game. Planning upcoming implementation of action plans.
Day 3: Implementation	Developing target skills-grades profiles specific to each ward. Developing or validating checklists. Evaluating first implementations of action plans. Adapting action plans.
Day 4: Implementation and evaluation	Developing detailed target value stream based on developed skills-grades profiles. Performing quality audits of project and action plans. Visiting site of implemented action plans.

Note. Reprinted from Fülleman, Fridrich, et al. (2016).

Table 2

rWG(J), ICCs and F-values of aggregated variables

Variable	<i>rWG(J)</i>	<i>ICC(1)</i>	<i>ICC(2)</i>	<i>F-value</i>
Psychosocial context				
Resources (total)	.97	.11	.35	1.52
Managerial support	.81	.17	.46	1.87*
Control	.87	.19	.51	2.05**
Role clarity	.95	.03	.12	1.14
Peer support	.89	.13	.39	1.64**
Job demands	.87	.18	.50	2.00**
Affective context				
Positive affects (total)	.82	.16	.47	1.88*
Valence	.67	.19	.51	2.05***
Positive activation	.78	.09	.31	1.44
Negative activation	.68	.19	.50	2.0**

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3

Means, standard deviations and intercorrelations of individual-level (N=255) and team-level (N =29) variables

	<i>M</i>	<i>SD</i>	3	4	5	6	7	8	9	10	11
1 Outcome Expectancy	5.60	0.91									
2 Job Resources (total)	3.76	0.32	.72***	.70***	.72***	.87***	-.60***	.53**	.41*	.65***	-.44**
3 Control	2.95	0.37		.31	.45*	.47*	-.70***	.60**	.50**	.67***	-.57**
4 Role clarity	4.34	0.32			.37 [†]	.55**	-.44**	.38*	.33 [†]	.43*	-.31
5 Peer support	3.95	0.39				.43*	-.28	.27	.21	.32 [†]	-.13
6 Managerial support	3.77	0.61					-.45*	.39*	.26	.54**	-.35 [†]
7 Job demands	2.96	0.5						-.76**	-.69***	-.78***	.69***
8 Positive affects (total)	4.61	0.75							.97***	.94***	-.80***
9 Positive activation	4.56	0.69								.83***	-.69***
10 Valence	4.07	0.98									-.86***
11 Negative activation	3.78	0.89									

Note. Outcome Expectancy is an individual-level variable, the other variables are team-level variables.

[†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed).

Table 4

Multilevel analysis of psychosocial and affective context on outcome expectancy

Parameter	Null model	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>
Intercept	5.62 (0.10)***	5.63 (0.09)***	5.61 (0.09)***	5.64 (0.10)***	5.63 (0.08)***	5.62 (0.08)***	5.64 (0.08)***	5.63 (0.08)***
Resources (total)		0.76 (0.35)*					0.36 (0.39)	
Role clarity			-0.16 (0.33)			-0.17 (0.31)		
Support colleagues			0.08 (0.27)			0.13 (0.25)		
Managerial support			0.36 (0.18)*			0.24 (0.20)		0.24 (0.16)
Control			0.28 (0.34)			0.08 (0.33)		
Job demands		-0.04 (0.23)	-0.04 (0.26)			0.33 (0.30)		
Positive affects (total)				0.15 (0.21)				
Valence					0.50 (0.08)*	0.32 (0.27)	0.22 (0.11)*	0.22 (0.10)*
Positive activation					-0.29 (0.22)	-0.09 (0.24)		
Negative activation				-0.18 (0.17)	0.03 (0.18)	-0.08 (0.19)		

[illegible]

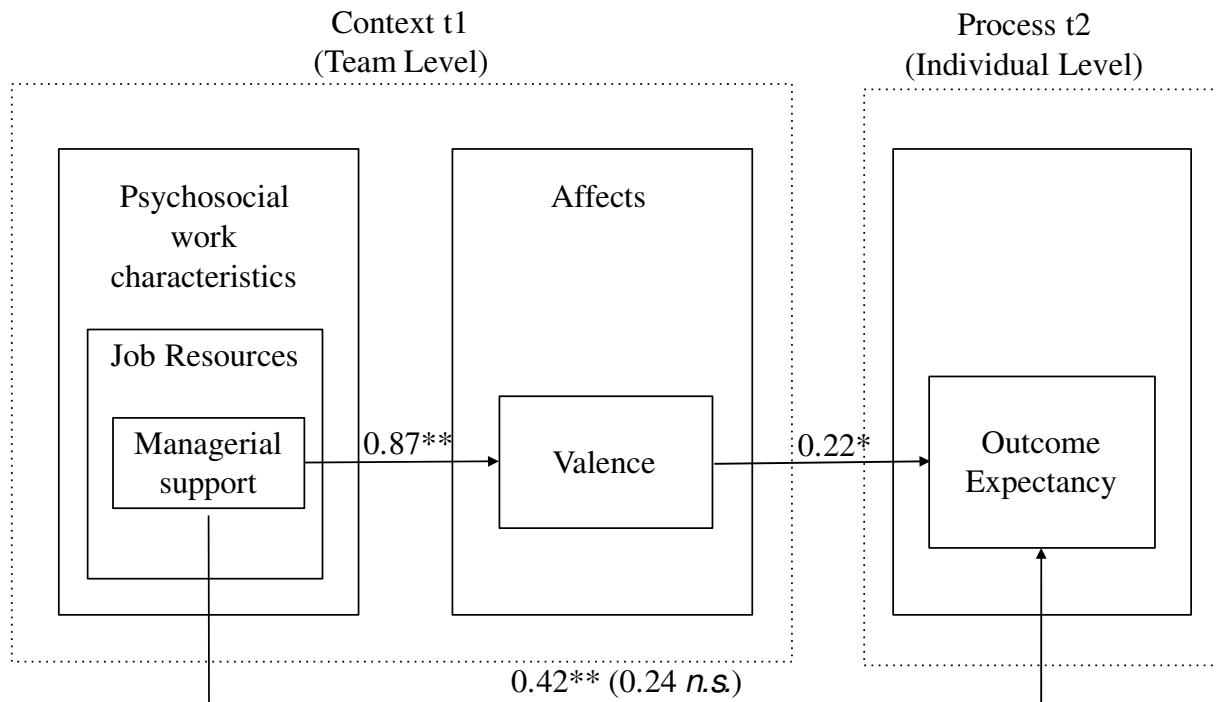


Figure 1. Unstandardized regression coefficients for the relationship between managerial support and outcome expectancy as mediated by valence. The unstandardized regression coefficient between managerial support and outcome expectancy, controlling for valence, is in parentheses.

t1 = time point 1, t2 = time point 2.

* $p < 0.05$, ** $p < 0.01$ (one-tailed).